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Smoking Intensity Among Male Factory Workers in Kunming, China

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Abstract

Introduction. This study investigated the intensity of cigarette consumption and its correlates in China among urban male factory workers, a cohort especially vulnerable to tobacco exposure, one that appears to have benefitted little from recent public health efforts to reduce smoking rates. *Methods*. Data were collected from men working in factories of Kunming city, Yunnan, China, who are current daily smokers (N = 490). A multinomial logistic regression was conducted to examine the factors in association with smoking intensity in light, moderate, and heavy levels. *Results*. Light smoking correlated with social smoking, smoking the first cigarette later in the day, self-reported health condition, and quit intention. Heavy smoking was associated with purchase of lower priced cigarettes, difficulty refraining from smoking, and prehypertensive blood pressure. *Conclusion*. Even in regions where smoking is highly prevalent, even among cohorts who smoke heavily, variation exists in how cigarettes are consumed. Analyses of this consumption, with special consideration given to smoking intensity and its correlates, can help guide tobacco-control strategists in developing more effective interventions.

Keywords

smoking intensity, pro-tobacco environment, tobacco control in China

Introduction

Urbanization and industrialization of the labor force have been cardinal features of China's sociological transformation during the past 2 decades.[1] As China has become "the factory of the world," more and more Chinese have moved into urban blue-collar jobs. The smoking epidemic among these workers—particularly among men—is of major public health concern with significant economic and health burdens that require urgent and effective tobacco-control efforts.

In China, the world's largest consumer and producer of cigarettes, smoking prevalence has declined in the past 15 years, even as it has remained highly gendered. Among males, national smoking rates have dropped from 63% in 1996, to 57.4% in 2002, and to 54% in 2010.[2] Smoking prevalence among females in China has also declined and remains low: with a 3.8% national female smoking rate in 1996, 2.6% in 2002, and 2.1% in 2010.

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A notable demographic exception in these recent public health victories across China has been male blue-collar workers. From 2002 to 2010, whereas smoking prevalence among men in many occupations remained constant or declined, smoking among male blue-collar workers increased (from 57% in 2002 to 67% in 2010).[2] Similar to the United States and other countries in Europe,[3] China's highest smoking rate has been found in men of blue-collar jobs (67%) when compared with men in other occupations, such as farming (61%), government service (54%), health care (41%), and education (38%).[2]

To gain insights into developing tobacco-control strategies for China's blue-collar workers, this study focuses on male current smokers employed in factories of Kunming, the capital city of Southwest China's Yunnan province.

Yunnan province is a region where male smoking prevalence hovers between 76% and 80%, among the highest in China.[4-6] Among medical professionals in Yunnan, over half were current smokers in 2009. In Kunming city, more than half of the male adults were current smokers as of 2008.[7] This exceptionally high smoking prevalence among males in Kunming, Yunnan, is not surprising in light of the region's pro-tobacco environment.

Yunnan, also known as China's "tobacco kingdom," is one of the largest tobacco producing provinces in the country, with more than 50% of its tax revenue coming from the tobacco business.[8] Nearly the entire population in Yunnan relies on tobacco production, at one level or another, not simply tobacco farmers, cigarette manufacture workers, or retailers. Three of the most popular brands in China today are Yunnan's Yuxi, Yunyan, and Hongtashan.[9] In 2011, the Hongyunhonghe Group sold more than 1 billion Yunyan cigarettes in Kunming city alone.[10]

In contemporary China, cigarette prices vary significantly, ranging from 1.5 yuan/pack (or approximately US$0.24) to 150 yuan/pack (or US$22.42), with quite a significant numbers of brands costing ≤4 yuan (or US$0.75) per pack.[11] Given the availability and variability of local brands, cigarettes are not only accessible and affordable but also easily used as social status proxies.

The combination of various socioeconomic factors such as tobacco production, affordability of cigarettes, and the transition from farming to blue-collar work make Yunnan a particularly challenging region for effective tobacco control. To enhance understanding of blue-collar workers' smoking in China, this study describes smoking intensity among male factory workers in Yunnan's provincial capital Kunming and examines the sociodemographic and psychological correlates in association with smoking intensities. These findings will provide valuable insights for the formulation of new tobacco-control interventions well suited to a growing population, that is, blue-collar men in China, at high risk of smoking exposure.

Methods

Sample and Data Collection

Data were collected in a baseline assessment of smoking behaviors. The respondents were recruited from 4 Kunming factories which produce electrical machinery, metallurgical materials, automobile components, and construction materials, respectfully. These are owned by local medium-large enterprises with at least 1,000 male workers employed in each of the factories. Ethical approval was sought and granted by Stanford's Non–Medical Institutional Review Board.

A total of 550 participants completed the baseline assessment. All were male, over 18 years of age, smoked at least 1 cigarette per day, and were working in 1 of the 4 factory settings at the time of the assessment.

A total of 60 respondents who were employed on time-limited positions were excluded from the study to ensure greater work-week uniformity and increase representativeness of the study sample of the workforce population. We compared the 60 excluded respondents with the 490

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respondents included in the analyses in terms of smoking behaviors and demographic characteristics. These excluded smokers were not statistically different in smoking intensity compared with the included smokers.

Measure

Smoking Intensity. Participants were asked to report the number of cigarettes they smoked in the past 24 hours. Based on their responses, we categorized the study sample into 3 levels of smoking intensities: light (<10 cigarettes daily), moderate (between 10 and 20 cigarettes daily), and heavy (>20 cigarettes daily). These definitions are consistent with previous studies conducted outside of China.[12-15]

Background Characteristics. As part of a self-report questionnaire, the following sociodemographic variables were assessed: age, education (less than high school, high school, college, and graduate education), family yearly income (coded based on the sample's median: <25 000 yuan vs 25 000 yuan or higher), and marital status (married vs others). Participants were asked to identity their occupation from a list of positions. Two variables were created based on participant's occupation: class of work(managerial vs nonmanagerial) and type of work (blue vs white collar).

Smoking History and Behaviors. We assessed years of smoking by asking respondents, "How old were you when you started smoking regularly?" Participants were asked to indicate the price of the cigarettes that they smoke in Yuan per pack (coded into ≤4 yuan vs >4 yuan). They were asked to indicate the number of cigarettes they smoked in the past 7 days when they were alone with no one else around. Participants were classified as "social smokers" if <10% of their total smoked cigarettes in the past 7 days were smoked alone and not with other people (which implies >90% of their total smoked cigarettes were smoked with people). Other smoking behaviors related to levels of nicotine dependence were assessed by asking respondents "Do you inhale when you smoke?" and by using 5 items from the Fagerstrom Test of Nicotine Dependence (FTND)[16] assessing time to first cigarette, difficulty refraining from smoking where it is forbidden, which cigarette would you hate most to give up, relative intensity of smoking during the first hours after waking, and smoking even if bedridden by illness. For previous quit attempts and intent to quit information, respondents were asked how many times they quit smoking for at least 24 hours during the past year as well as whether or not they were seriously contemplating quitting smoking. Those contemplating quitting within the next 30 days, 60 days, 6 months, or 24 months we classified as having a quit intention.

Physical and Mental Health Status. Four variables were included to measure respondents' health conditions: perceived general health status, concurrent health issues, blood pressure, and self-reported depression symptoms. Perceived general health was assessed asking respondents, "How would you describe your health?" (coded as excellent/good vs fair/poor). They were also asked to indicate which health issues they were experiencing at the time of the survey. The number of concurrent health issues was coded in 3 categories: none, 1, and 2 or more. Research staff measured respondents' blood pressure on site at the time of the survey; those with blood pressure more than 120/80 mm Hg were classified as having blood pressure in the prehypertensive range.[17] Self-reported depression symptoms was assessed by asking respondents to indicate the frequency of experiencing each of 3 symptoms in the past 7 days, (*a*) having trouble shaking off sad feelings, (*b*) feeling depressed, and (*c*) feeling sad, using a 5-point scale: 1 (0 days in the past 7 days), 2 (1 day), 3 (2-3 days), 4 (4-5 days), and 5 (6-7 days). A total score, ranging from 3 to 15, was computed by summing up all 3 items. The internal consistency of the 3 depression items as measured by Cronbach's α was .86 for this sample.

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Data Analysis

Data were analyzed using STATA version 11. We calculated summary statistics and standard errors for each variable in terms of the 3 levels of smoking intensity (light, moderate, and heavy). To examine the bivariate associations of each variable with smoking intensity, χ^2 tests were used for categorical variables and ANOVA was used for continuous variables. Multinomial logistic regression was then conducted to examine factors associated with the 3 groups of smokers who smoked in light, moderate, and heavy levels. The model included preselected a priori covariates (age, education, family income, class of work, blue vs. white collar work, marital status, time to first cigarette, number of concurrent health issues, and depression scores) found in the literature to be associated with smoking intensity in Chinese populations[4,18-21] and other variables that attained a P value ≤ .20 in the bivariate comparisons.[22]

Results

Sample Characteristics

Table 1 presents characteristics of the overall sample (N = 490) and by smoking intensity levels: light, moderate, and heavy. A majority of the respondents was married (81%) with ages ranging from 20 to 70 (36% <35, 36% 35-44, 7% 45-54, 21% 55+; mean = 43, SD = 10.83), two thirds had at least a high school education (36% high school graduates and 22% college graduates), more than three quarters worked in blue-collar positions (79%), and more than half (59%) had a family income <25 000 yuan per year, well below the national urban annual salary average of 29 229 yuan of 2008.[23]

The daily cigarette consumption of the sample ranged from 1 to 60 (mean = 17.89, SD = 8.49). A majority (69%) of the respondents smoked between 10 and 20 cigarettes daily, 13% smoked less than 10 cigarettes, and 18% smoked more than 20 cigarettes. The average age starting smoking regularly was 21 (SD = 5.14; 16% started before age of 18, 48% at 18-21, 27% 22-34, 9% 35+). A majority of the respondents (90%) spent >4 yuan/pack of cigarettes smoked. About 12% indicated they were predominantly social smokers smoking >90% of their cigarettes with others. More than half of respondents (54%) had their first cigarette of the day within 30 minutes of awakening, and the FTND score computed including cigarettes consumed daily in the study sample was 3.26 (2.04); 44% were considered dependent based on FTND score 4 or more.[16] The FTND scores for light, moderate, and heavy intensity groups were 1.00 (SD = 1.19), 3.05 (SD = 1.60), and 5.67 (SD = 1.65), respectively. Only 1 in 4 respondents reported a quit attempt in the previous year; 38% indicated intention to quit smoking (19% indicated ready to quit within 30 days, 10% within 60 days, 20% within 6 months, 51% within 24 months).

Many in the study sample (60%) perceived their health as either fair or poor; 63% indicated having at least 1 health issue (1 illness = 31% and 2 or more illnesses = 32%). Half (52%) reported experiencing no depression symptoms. And researchers, using cuff and stethoscope, determined that most (72%) had normal blood pressure.

Characteristics by Smoking Intensity Levels

Bivariate analyses indicated smoking intensities were significantly associated ($P < .05$) with education, cigarette price, social smoking, onset age of regular smoking, each of the smoking behaviors assessed (FTND items and smoking inhalation), quit attempts in the previous year, quit intention, and blood pressure (Table 1).

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Table 1. Participant Characteristics by Light, Moderate, and Heavy Smoking Intensities.

	By Smoking Intensity				
	All (N = 490)	Light (<10 CPD) (n = 63; 13%)	Moderate (10-20 CPD) (n = 339; 69%)	Heavy (>20 CPD) (n = 88; 18%)	*P* Value[a]
Sociodemographics					
Age (mean ± SD)	43.00 ± 10.83	42.06 ± 11.99	42.36 ± 10.69	46.14 ± 10.02	.30
Education					.01
Less than high school	31%	21%	31%	40%	
High school graduates	36%	29%	37%	36%	
College	22%	29%	22%	19%	
Beyond college	11%	22%	10%	5%	
Annual family annual income > 25 000 yuan	41%	38%	42%	40%	.80
Job position—Manager	27%	33%	24%	30%	.27
Type of work					.24
White collar	21%	25%	12%	15%	
Blue collar	79%	75%	78%	85%	
Marital status					.52
Married	81%	76%	82%	81%	
Not married	19%	24%	18%	19%	
Cigarette purchasing and Smoking behaviors					
Price per cigarette pack					<.01
≤4 yuan	10%	8%	8%	23%	
>4 yuan	90%	92%	92%	77%	
Smoked predominantly socially (>90% of cigarettes smoked with others)	12%	24%	11%	7%	<.01
Age started smoking regularly (mean ± SD)	21 ± 5.14	23 ± 6.10	21 ± 5.16	20 ± 3.91	<.01
Not inhaling when smoking	31%	46%	29%	25%	.01
Time to first cigarette after waking[b]					<.01
Within 30 minutes	54%	16%	55%	75%	
Between 31 and 60 minutes	24%	19%	26%	17%	
After 60 minutes	22%	65%	18%	8%	
Hard to refrain from smoking where forbidden[b]	30%	19%	26%	56%	<.01
Hate to give up morning cigarette[b]	20%	16%	17%	34%	<.01
Still smoke when bedridden by illness[b]	26%	8%	24%	47%	<.01
Smoke more during first 2 hours of the day[b]	22%	5%	20%	41%	<.01
Nicotine Dependence score[c] (mean ± SD)	3.26 ± 2.04	1.00 ± 1.19	3.05 ± 1.60	5.67 ± 1.65	.01
Previous quit attempts and intent to quit					
Had a 24-hour quit attempt within past year	25%	38%	24%	17%	.01
Indicated intention to quit	38%	51%	38%	27%	.01
General and mental health conditions					
Perceived general health					.87
Excellent/good	40%	43%	39%	39%	
Fair/poor	60%	57%	61%	61%	
Number of concurrent health issues					.23
None	38%	33%	40%	30%	
One illness	31%	38%	28%	35%	
Two or more illnesses	32%	29%	32%	35%	
Blood pressure in prehypertensive range	28%	24%	24%	44%	<.01
Depression scores (mean ± SD)	4.84 ± 2.61	4.78 ± 2.73	4.85 ± 2.57	4.85 ± 2.71	.70

Abbreviations: CPD, cigarettes per day; FTND, Fagerstrom Test of Nicotine Dependence.
[a]Comparisons across 3 smoking intensity groups.
[b]Items from FTND.
[c]To avoid collinearity with the dependent variable, this article used the nicotine dependence score, which is the sum of the 5 items from FTND, excluding smoking intensity.

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Correlates of Smoking Intensity Levels: Multivariate Results

Table 2 presents results from the multinomial logistic regression model depicting odds ratio estimates of factors significantly associated with smoking intensity levels. Both "light" and "heavy" smoking intensity groups were modeled jointly using "moderate" as the referent group. The multivariate analyses indicated that smoking intensity was not associated with sociodemographics or depression but were associated with cigarette price, social smoking, smoking inhalation, time to first cigarette, difficulty refraining from smoking, quit intention, and 2 measures of health status (self-reported health issues and prehypertensive blood pressure).

Specifically, when compared with both moderate and heavy smokers (estimates using heavy smoking as a referent were not shown in Table 2), light smokers were more likely to smoke cigarettes in social situations, allow more time to pass after waking each morning before lighting the first cigarette of the day, and express intentions to quit smoking. Light smokers were also more likely refrain from inhaling smoke and report a health issue than moderate smokers. When compared with both moderate and light smokers (estimates using light smoker as a referent are not shown in Table 2), heavy smokers were more likely to smoke lower priced cigarettes. Heavy smokers found it more difficult to refrain from smoking and were more likely to have blood pressure in the prehypertensive range than moderate smokers (Table 2).

Discussion

In line with a recent survey conducted in 6 Chinese cities, which found that 27% of male smokers indicated that they are moving toward quitting (18% preparing to quit in next month, 9% in the midst of a quit attempt),[20] the rates of quit intention in our studied sample are relatively low (38% indicated an intention to quit within the next 24 months). Even so, one third of the studied smokers and more than half of light smokers present with quit intentions, which provides encouraging evidence for future tobacco-control intervention, even in the most tobacco friendly areas.[20,24]

Men in contemporary China often swap and then smoke cigarettes for instrumental purposes.[25] Offering/receiving cigarettes and consuming them in each other's presence are ways for men to pay respect, build trust, and cement friendship.[25] Many Chinese men find it difficult to avoid group smoking, because refusing to partake in cigarette exchange may be seen as a social slight and may result in lost connections and damaged relationships with others.[18,26,27] In our study sample, light smokers are more likely to intend to quit smoking than other smokers and they tend to smoke most of their cigarettes in social situations. These results may reflect that, despite their desire to quit smoking, light smokers may find it difficult to resist consuming cigarettes because they are susceptible to the social and ethical suasion of cigarette exchange practices. They may further suggest that to promote successful smoking cessation outcomes among this group of light smokers, greater effort needs to be made to denormalize social smoking customs[28,29] and not simply expand but also enforce smoke-free legislation.[30]

Whereas light smokers in our study are especially responsive to how many people in their immediate social setting are smoking, heavy smokers appear more sensitive to how much cigarettes cost. Heavy smokers tend to consume low-priced cigarettes more than light or moderate smokers, irrespective of the other sociodemographic factors we studied. In early 2012, a public disagreement broke out in China between the Ministers of Health and Industry and Information Technology over the merits of raising cigarette taxes.[31] Our findings would favor the support of the stance taken by the Minister of Health that low-priced modestly taxed cigarettes in China are a significant health danger and require elimination.

Our study confirms that heavy smokers are more dependent on nicotine than others, as they are more likely to have their first cigarette within 30 minutes after awakening. Previous studies

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Table 2. Multinomial Logistic Regression Model of Selected Correlates Associated With Smoking Intensities (N = 489).[a]

	Light (<10 Cigarettes Daily) Versus Moderate[b]		Heavy (>20 Cigarettes Daily) Versus Moderate[b]	
	OR (95% CI)	*P*	OR (95% CI)	*P*
Smoking behaviors				
Cigarette price				
High or median (>4 yuan) (referent)	1		1	
Low (≤4 yuan)	0.69 (0.18-2.62)	.59	**3.23 (1.45-7.16)**	**<.01**
Smoked most cigarettes (>90%) socially	**2.74 (1.44-6.55)**	**.02**	0.40 (0.14-1.14)	.09
Inhale when smoking				
No	**2.09 (1.03-4.23)**	**.04**	1.23 (0.63-2.37)	.54
Yes (referent)	1		1	
Time to first cigarette after waking				
After 60 minutes	**17.65 (6.82-45.66)**	**<.01**	0.66 (0.25-1.69)	.39
Between 31 and 60 minutes	**2.95 (1.10-7.88)**	**.03**	0.89 (0.43-1.84)	.76
Within 30 minutes (referent)	1		1	
Difficult to refrain from smoking where forbidden				
Yes	2.30 (0.95-5.60)	.07	**2.63 (1.45-4.75)**	**<.01**
No (referent)	1		1	
Quit attempts and intention				
Had a 24-hour quit attempt within past year				
Yes	1.54 (0.60-3.99)	.37	0.90 (0.45-1.82)	.79
No (referent)	1		1	
Indicated intention to quit				
Yes	**2.10 (1.04-4.22)**	**.04**	0.63 (0.34-1.16)	.14
No (referent)	1		1	
Health condition				
Number of self identified medical conditions				
One illness	**2.31 (1.07-5.00)**	**.03**	1.44 (0.75-2.78)	.27
Two or more illnesses	1.14 (0.47-2.74)	.78	0.91 (0.45-1.83)	.79
None (referent)	1		1	
Measured blood pressure in prehypertensive range				
Yes	1.06 (0.48-2.37)	.88	**2.22 (1.25-3.96)**	**.01**
No (referent)	1		1	

Abbreviations: OR, odds ratio; CI, confidence interval.
[a]All models were controlled for sociodemographics (age, education, family income, type of work, class of work, marital status), age first smoked regularly, other items from the Fagerstrom Test of Nicotine Dependence (hate to give up morning cigarette, smoke being sick, smoke more during first hours after waking), and depression scores.
[b]"Light" and "heavy" smoking intensity groups were modeled jointly in the multinomial logistic regression model using "moderate" as the referent group.
Note. Estimates in boldface indicated that they are significant at 5% level.

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found that a home smoke-free environment, which disallows smoking inside the home, disrupts the established smoking pattern by delaying smoker's first cigarette after awakening, making a smoker forgo his/her cigarette after meal, and breaking cue of smoking, and this smoking disruption significantly decreased cigarette consumption as well as increased likelihood of quit and quit maintenance.[32] Promoting a home smoke-free environment may not only substantially reduce secondhand smoke exposure but also discourage smoking behaviors. Regarding smokers' health conditions, interestingly, light smokers are more likely to self-identify having one illness while heavy smokers are more likely to be diagnosed having blood pressure in the prehypertensive range on-site than other smokers. The disparity in health perception by smoking intensity, such that light smokers have a better idea about their own health status than heavy smokers, while heavy smokers are more likely to be diagnosed with illness, may reflect their different attitudes and knowledge toward their health conditions. Because illness is one main reason for Chinese males to quit and reduce smoking,[24,33] raising the awareness of their own health status and their current illness caused by cigarette smoking might increase their quit intention.

This study has limitations. The results drawn from male smokers who worked in the 4 factory settings in Kunming, City, cannot be generalized to the overall male smoker population in China. However, focusing on this population with potential high risk of cigarette smoking in one of the largest tobacco producing areas of the country deepens understanding of tobacco use as well as its correlates among Chinese men.

Conclusion

Yunnan is one of China's largest tobacco producing provinces, a region marked by pro-tobacco attitudes and an exceptionally high male smoking prevalence. Even in regions such as this, even among cohorts where smoking is nearly ubiquitous, variation exists in how cigarettes are consumed.

The high and rising prevalence of smoking among our study group[4,5] as well as low quit intention suggests that male factory workers have been poorly served to date by China's tobacco-control efforts. In addition, our findings that 63% of respondents self-identified with at least 1 illness and 28% have blood pressure in the prehypertensive range highlight the dramatic disease burden that tobacco inflicts on male factory workers and their family members. Our data suggest that tobacco-control strategists should not give up on China's ostensibly most 'hardcore' of smoking cohorts, but rather recognize them as comprised of people who interact with cigarettes in diverse ways. Our findings regarding correlates of smoking intensity offer insights to potential new directions for formulating tobacco-control interventions for such cohorts, paying close attention to smoking intensity. For light smokers, programs should focus on making cessation assistance available, denormalization of cigarette smoking as a way to socialize, and using health status to promote cigarette quitting. For heavy smokers, programs should focus on prohibiting the production and sale of inexpensive cigarettes, creating smokefree home environments, as well as increasing their awareness of health status for intervention to increase their quit intention.

Declaration of Conflicting Interests

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References

1. Song H, Thisse JF, Zhu X. Urbanization and/or rural industrialization in China. *Reg Sci Urban Econ*. 2012;42:126-134.
2. China Center for Disease Control and Prevention. *Tobacco Control and China's Future*. Anhui, China: China Center for Disease Control and Prevention; 2011.
3. McCurdy S, Sunyer J, Zock J, Anto J, Kogevinas M. Smoking and occupation from the European Community Respiratory Health Survey. *Occup Environ Med*. 2003;60:643-648.
4. Anderson Johnson C, Palmer PH, Chou CP, et al. Tobacco use among youth and adults in Mainland China: the China Seven Cities Study. *Public Health*. 2006;120:1156-1169.
5. Yang G, Fan L, Tan J, et al. Smoking in China: findings of the 1996 National Prevalence Survey. *JAMA*. 1999;282:1247-1253.
6. Li R, Wang D, Chen J, Chai J, Tang M. Regional differences in smoking, drinking, and physical activities of Chinese residents [published online February 21, 2012]. *Asia Pac J Public Health*. doi:10.1177/1010539512437604.
7. Anon. Over half of the male in Kunming smoked. http://www.etmoc.com/market/looklist.asp?id=18960. Published 2009. Accessed March 15, 2013.
8. Wright AA, Katz IT. Tobacco tightrope—balancing disease prevention and economic development in China. *N Engl J Med*. 2007;356:1493-1496.
9. Anon. Popular cigarette brands. http://www.etmoc.com/market/Brandprice.asp. Published 2012. Accessed March 1, 2012.
10. Chen L. The sale of Yunyan has reached over 500 billion packs in Kunming market. http://www.etmoc.com/market/looklist.asp?id=26410. Published 2012. Accessed March 1, 2012.
11. Anon. Cigarette price in China tobacco market. http://www.etmoc.com/market/Brandprice.asp. Published 2012. Accessed March 1, 2012.
12. Webb M, Carey M. Tobacco smoking among low-income black women: demographic and psychosocial correlates in a community sample. *Nicotine Tob Res*. 2008;10:219-229.
13. Okuyemi K, Ahluwalia J, Banks R, et al. Differences in smoking and quitting experiences by levels of smoking among African Americans. *Ethn Dis*. 2004;14:127-133.
14. Okuyemi K, Harris K, Scheibmeir M, Choi M, Powell J, Ahluwalia J. Light smokers: issues and recommendations. *Nicotine Tob Res*. 2002;4(suppl 2):S103-S112.
15. Pierce J, Messer K, White M, Cowling D, Thomas D. Prevalence of heavy smoking in California and the United States, 1965-2007. *JAMA*. 2011;305:1106-1112.
16. Heatherton T, Kozlowski L, Frecker R, Fagerstrom K. The Fagerstrom Test for Nicotine Dependence: a revision of the Fagerstrom Tolerance Questionnaire. *Br J Addict*. 1991;86:1119-1127.
17. Chobanian A, Bakris G, Black H, et al. The seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment on High Blood Pressure. *JAMA*. 2003;289:2560-2573.
18. Ding D, Hovell M, Ji M, et al. Employment and social "determinants" of smoking in urbanizing China: a representative survey. *Nicotine Tob Res*. 2009;11:779-784.
19. Sun WY, Shun J. Smoking behavior amongst different socioeconomic groups in the workplace in the People's Republic of China. *Health Promot Int*. 1995;10:261-266.
20. Yang T, Shiffman S, Rockett IR, Cui X, Cao R. Nicotine dependence among Chinese city dwellers: a population based cross sectional study. *Nicotine Tob Res*. 2011;13:556-564.
21. Tsoh J, Lam J, Delucchi K, Hall S. Smoking and depression in Chinese Americans. *Am J Med Sci*. 2003;326:187-191.
22. Hosmer D, Lemeshow S. *Applied Logistic Regression*. New York, NY: John Wiley; 1989.
23. Anon. The average national urban annual salary is 29,229 yuan in 2008. http://edingyuan.cn/forum.php?mod=viewthread&tid=15638&extra=page%3D1. Published 2009. Accessed March 15, 2013.
24. Hesketh T, Lu L, Jun Y, Mei W. Smoking, cessation and expenditure in low income Chinese: cross sectional survey. *BMC Public Health*. 2007;7:29.
25. Kohrman M. Depoliticizing tobacco's exceptionality: male sociality, death and memory-making among Chinese cigarette smokers. *China J*. 2007;58:85-109.
26. Hu M, Rich ZC, Luo D, Xiao S. Cigarette sharing and gifting in rural China: a focus group study. *Nicotine Tob Res*. 2012;14:361-367.

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27. Kohrman M. Smoking among doctors: governmentality, embodiment, and the diversion of blame in contemporary China. *Med Anthropol*. 2008;27:9-42.
28. Malone R. China's chances, China's choices in global tobacco control. *Tob Control*. 2010;19:1-2.
29. Kohrman M. New steps for tobacco control in and outside of China. *Asia Pac J Public Health*. 2010;22:189S-196S.
30. Anon. Youth smoking trend prompts action by city. http://www.china.org.cn/china/2012-02/20/content_24680428.htm. Published February 20, 2012. Accessed March 15, 2013.
31. Lin L. Uncertainty remains for tobacco tax hike. http://www.china.org.cn/china/NPC_CPPCC_2012/2012-03/14/content_24893783.htm. Published 2012. Accessed May 1, 2012.
32. Mills A, Messer K, Gilpin E, Pierce J. The effect of smoke-free homes on adult smoking behavior: a review. *Nicotine Tob Res*. 2009;11:1131-1141.
33. Qian J, Cai M, Gao J, Tang S, Xu L, Critchley J. Trends in smoking and quitting in China from 1993 to 2003: National Health Service Survey data. *Bull World Health Organ*. 2010;88:769-779.

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